



Resources for Healing: Columbia-Presbyterian Medical Center

1980 Annual Report

A modern academic medical center is an enterprise of nearly unimaginable complexity. As in any large organization, the skill with which it marshals its human and physical resources is vital to its success. Sound management, fiscal responsibility, organizational strength—all matter, and matter greatly.

Despite the importance of organization, a medical institution must always understand that the final measure of its achievements is how well it serves a human life in need of help. Great medical centers are, first and foremost, great centers of treatment where the individual patient can draw upon all the resources of medicine. Always, they have as their final objective the improvement of the healer's art.

This report presents some graphic illustrations of how Columbia-Presbyterian Medical Center's extraordinary capabilities and accomplishments in clinical care, biomedical research, and medical education affect the course of patient treatment. Not only do these exemplify the exceptional resources available to every patient under our care, but they also document how the Center's intellectual and scientific talent is advancing medical art and science worldwide.

From left to right,
Henrik Bendixen
*Acting Provost and Vice President
for Health Sciences, Columbia
University in the
City of New York*
Felix E. Demartini
*President, Presbyterian Hospital
in the City of New York*
Michael I. Sovern
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Resources for Healing: Obstetrics/Pediatrics

Baby Calabrese and the Rh Factor

When in 1964 Linda Calabrese bore a healthy baby girl, the happy event spelled tragedy for her subsequent pregnancies. The very act of birth had triggered a destructive immunoreaction to the blood of each of the six babies she would conceive over the next 16 years.

Linda had developed Rh sensitivity, an affliction of women with Rh negative blood who carry or bear Rh positive babies. In such pregnancies, the woman's immunological system may react to the baby as it would to a disease, attacking the developing fetus' Rh positive blood cells, producing severe anemia, heart failure, and death. (An earlier abortion or miscarriage of an Rh positive fetus, or an accidental transfusion of Rh positive blood, can produce the same reaction.)

Rh disease has been one of the most frequent causes of fetal mortality. Two decades ago, it killed as many as 10,000 babies annually in the U.S. alone. But today, the disease is almost completely preventable. In 1961, two groups working independently, one in Liverpool and one at Columbia-Presbyterian, developed the solution. The Columbia-Presbyterian team, Drs. Vincent Freda, John Gorman, and William Pollack of the Departments of Obstetrics and Gynecology and Pathology developed a drug called RhoGAM. If no sensitivity has yet been developed, a single injection of RhoGAM, given to the mother after the birth of her first Rh positive child and after each subsequent

Neonatal Intensive Care Unit

One of the world's most sophisticated facilities for newborns in need of advanced life-support services, this 30-bed facility includes a staff of eight full time attending neonatologists, a full time anesthesiologist, 70 nurses and eight postdoctoral fellows. Each patient station is monitored by noninvasive sensors for heart rate and breathing. Oxygen levels of the most seriously ill infants are also monitored continuously. A satellite laboratory provides round-the-clock

analyses of blood gases and acid-base states of the infant using micro-methods that require only a fraction of a drop of the baby's blood (essential for premature babies whose tiny bodies typically hold no more than three ounces of blood).

These techniques, combined with an interdisciplinary team approach to the management of the care of critically ill infants, have helped produce a dramatic decline (illustrated to the right) in the mortality of low-birthweight babies at Columbia-Presbyterian.



delivery, suppresses the production of antibodies to the fetal red blood cells. Since RhoGAM was licensed by the United States government in 1968, it has saved the lives of tens of thousands of babies the world over.

Unfortunately, RhoGAM was not available to the general public in 1964 when Linda Calabrese gave birth to her first, normal (but Rh positive) baby. In the years that followed, the consequences were heartbreaking. Linda endured a series of tragic pregnancies, including two Rh related stillbirths, an Rh effected baby with Down's syndrome who was successfully delivered after 33 weeks but died shortly after delivery, a miscarriage, and an ectopic pregnancy that ruptured her left fallopian tube.

But by the time of her seventh pregnancy, in 1980, biomedical science and antepartum and neonatal intensive care had progressed enough to treat Linda's illness. By then, she had come under the care of Columbia-Presbyterian. The Center's pioneering work on Rh disease had earned it a worldwide reputation in the obstetrical treatment of Rh negative women. Linda was referred to Dr. Freda by her own obstetrician.

Fourteen to sixteen weeks after gestation, amniocentesis was performed in conjunction with ultrasound by a member of the Clinical Genetics team. A sample of amniotic fluid was

Birthweight and Perinatal Mortality at Columbia-Presbyterian

Birthweight in grams*	Mortality Rate		
	1973	1976	1980
500-1000	91.8%	76.5%	55.5%
1000-1500	66.7%	26.7%	18.6%
1500-2000	19.7%	13.4%	8.0%

*Birthweight for normal babies averages 3500 grams

Advanced Fetal Monitoring

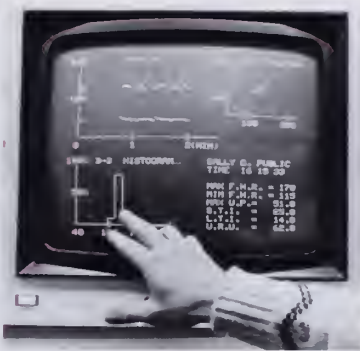
Continuous monitoring of babies during labor and delivery was developed at the Center and is now routine practice for nearly all deliveries at Presbyterian Hospital. A minicomputer automatically records fetal heart rate and intrauterine pressure through special sensors and analyzes and presents the data to the physician on command. The computer system can also issue an alarm to attending physicians or nurses when it detects signs of trouble. The Center also pioneered the use of ultrasonography, which uses high frequency sound to monitor fetal breathing.

Perinatal Program

Columbia-Presbyterian, through its Perinatal Division, has led an international trend in the coordination of research and clinical care in pediatrics, obstetrics, and anesthesiology, especially in the management of high risk pregnancies and infants. A team of specialists meets each week to review patient problems and to discuss possible courses of treatment. A full attending staff of perinatologists can be mobilized instantly to provide intensive care during labor, delivery, and early neonatal life.

Fluorescent Polarization of Amniotic Fluid

Lung maturity is a critical measure of a premature baby's susceptibility to respiratory difficulties, the primary cause of death among low birthweight, high-risk newborns. Investigators in the Center's Perinatology Clinic Service in collaboration with the Department of Physiology have developed an accurate, rapid method to measure lung maturity, one that uses fluorescent polarized light to analyze the amniotic fluid. The method enables the attending team to decide quickly whether a fetus in danger can be safely delivered.



Regional Perinatal Network

Columbia-Presbyterian Medical Center is one of eight medical centers in the nation awarded grants from the Robert Wood Johnson Foundation to serve as a regional center for perinatal care for critically ill infants. Nine hospitals in western and upper Manhattan, New Jersey, Westchester and Rockland Counties, and Connecticut are part of the network and refer

high risk cases to the Center. A specially furnished ambulance and transport team, including neonatal-perinatal specialists, is dispatched to the referring hospital to stabilize the infant prior to transfer to the Center for treatment. Network patients are guaranteed admission to the Center. 35% of admissions to the Center's Neonatal Intensive Care Unit come from network hospitals.

Infant Stimulation and Bonding

Research has shown that early, intimate contact between a newborn and its mother increases the likelihood of a strong, happy relationship throughout childhood. Presbyterian Hospital provides a bonding period soon after normal deliveries and encourages frequent mother-child contact during the hospital stay. A special infant stimulation program is also offered to parents of newborns in the Neonatal Intensive Care Unit. Parents are permitted 24-hour visitation and physical therapists work with mothers to help them overcome their fear of touching their tiny premature babies.

Perinatal and Obstetrical Consultation Hotline

Physicians throughout the metropolitan area can consult Columbia-Presbyterian clinical specialists in obstetrical and perinatal medicine instantly by dialing the Regional Perinatal Network's hotline number. A team of Center nurses also provides training in the neonatal care of premature infants to the nursing staffs of network hospitals.



Baby Calabrese cont.

needed for genetic analysis, a step essential due to Linda's previous delivery of a fetus with Down's Syndrome. The test has become a routine procedure. Ultrasonography, a new imaging technique, allows the obstetrician to note the exact position of the fetus in the womb before inserting the needle. A decade ago, prior to the development of ultrasonography, amniocentesis this early in the pregnancy might have been fatal to the developing fetus.

The test indicated that Linda was carrying a healthy male infant with Rh positive blood. Careful monitoring of her pregnancy would be essential.

In most cases of Rh disease, the developing fetus must have one or more intrauterine transfusions, which give the baby blood rich in red cells to replace those destroyed by the mother's antibodies. Such transfusions are administered to extend the baby's life in the womb, and thereby increase its chances of survival. At 27½ weeks of pregnancy, Dr. Freda took another amniotic sample to analyze the baby's condition. The signs were favorable. A transfusion would not be needed.

Within days, however, Linda began to notice a decrease in the baby's activity. At 28½ weeks Dr. Freda took another amniotic sample. This time, he also injected a dye that would enable him to determine via x-ray whether the baby was swallowing amniotic fluid, a vital sign of fetal health. The baby was barely swallowing at all and the color of the amniotic fluid showed signs of trouble.

Another tap at 29½ weeks revealed a green tinge in the amniotic fluid. It was time to act. The next day, Dr. Freda performed a Caesarean section and delivered a severely anemic, but remarkably lively two-pound baby.

Six or seven years ago, a Caesarean at this stage of pregnancy would have been done only to save the life of the mother. The baby's chances of survival after birth would have been nil. Today, however, remarkable improvements in neonatal intensive care mean that critically ill babies can be delivered as early as 27 weeks after conception with better than even chances of survival.

Why? The Calabrese infant's story illustrates what a great medical center can now do for the newly born and critically ill patient. From the moment Linda was wheeled into the delivery room, the most sophisticated medical services in the world were put into action. Some examples:

- An interdisciplinary team of obstetricians, pediatricians, perinatologists, neonatologists, anesthesiologists and other specialists coordinated and supervised the infant's treatment.
- Computer monitoring was used during childbirth to track the baby's vital signs.
- A satellite laboratory adjoining the delivery room made possible rapid tests of the baby's condition.
- Transitional intensive care facilities on the delivery floor were used to stabilize the

Genetic Diagnosis and Counseling

The risks of genetic disorders are known to be greater in babies born to parents over 35 or to parents with a family history of inherited disease. Many such parents typically prefer abortion to the risk of a damaged baby. Columbia-Presbyterian's Program in Clinical Genetics provides genetic diagnosis to such parents and counsels them on the meaning, prog-

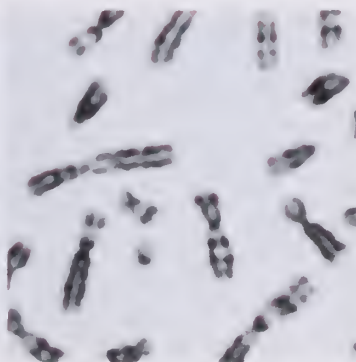
nosis, and clinical treatment of birth disorders. In cases where conception has already occurred and the fetus is determined to be at risk for a genetic disease, amniocentesis is offered to screen the fetus for possible chromosome damage. Since the vast majority of the tested fetuses prove to be normal, the result is a reduction of the number of unnecessary abortions.

Reproductive Science

Down's syndrome and other genetic disorders are known to result from errors in the division of chromosomes in human cell development. Teams of scientists in the Center's International Institute for the Study of Human Reproduction are exploring the mechanisms of the proteins that distribute chromosomes. They believe that their research may eventually lead to an understanding of the location in DNA of such errors. Once the location of the error is known, it is possible that recombinant technology could be used to correct the error.

General Obstetrical and Pediatric Group Practice

Mothers and children are given personalized treatment on an appointment basis by groups of obstetricians, pediatricians, nurse-practitioners, and other health workers organized to provide regular health care to Columbia-Presbyterian's neighboring communities. The Group Practice focuses on such preventive measures as check-ups, vaccinations, counseling, and vision tests.



newborn baby's condition before transfer to the Neonatal Intensive Care Unit.

- The infant's arterial oxygen level, a critical life sign, was constantly monitored.
- The baby was fed immediately to supply calories and stabilize his postnatal condition.
- Proper body temperature was carefully maintained.
- Oxygen was administered to sustain respiratory function.

Today, the procedures listed above are routine at Columbia-Presbyterian with babies such as Linda's (and have been widely adopted in hospitals around the world). So also is the concept of focusing a dozen or more obstetric and pediatric subspecialties on the single problem of saving the life of a newborn.

Yet, as recently as the early 60s, when Columbia-Presbyterian Medical Center built one of the first neonatal intensive care units in the U.S., few of these procedures were used. Under accepted medical practice at the time, critically ill babies were not immediately fed, vital signs were rarely monitored, oxygen administration was limited for fear of damaging babies' eyes and lungs, and the acidic state caused by the trauma of birth was considered normal.

Columbia-Presbyterian pioneered many of the advances that have revolutionized care of seriously ill newborns. To these achievements, Linda Calabrese's baby, now a thriving, healthy child, owes his life.

Resources for Healing:

Heart Disease

George Alexander's Chest Pains

In August, 1979, a young executive named George Alexander, a resident of Manhattan's Upper East Side, paid a visit to the Columbia-Presbyterian Medical Center's Specialized Center on Research in Arteriosclerosis Clinic (SCOR), which is located on the third floor of the Center's Dana Atchley Pavilion. In general, his health was excellent, but a routine checkup had revealed one potential health problem, an abnormally high concentration of cholesterol in his bloodstream.

This SCOR Clinic, directed by Dr. DeWitt S. Goodman, is one of only eight in the U.S. established by the National Institutes of Health to conduct clinical research into all aspects of arteriosclerosis. The SCOR Clinic is deeply interested in cholesterol, an important factor in the development of heart disease. The body makes a certain amount of cholesterol in addition to what it ingests in food, and evidently needs it as a component of cell structure. Insoluble by itself in blood, cholesterol travels through the circulatory system in chemical packages called lipoproteins. In its most familiar and most alarming manifestation, it forms deposits on the inner walls of the blood vessels within the heart and can clog them entirely, depriving the heart muscle itself of blood and causing a myocardial infarction, the classic heart attack.

While a good deal is known about cholesterol, much about its behavior is puzzling, even

Measuring Cholesterol

The relation between cholesterol turnover and metabolism in normal persons and in people with abnormally high cholesterol counts is the subject of extensive research. After nearly a decade of study, the Center's researchers have determined a set of equations that describes in numerical terms the production and storage of cholesterol in the body and bloodstream.

Noninvasive Diagnosis

The use of surgery or other invasive techniques to diagnose heart disease always involves risk to the patient. Where the risk level is too high, non-invasive methods are preferred. These range from such basic techniques as use of the stethoscope and ECG to the infusion of chemical or isotopic materials that can be scanned.



mysterious. Nobody understands, for example, why cholesterol accumulates in some parts of the body—the blood vessels, the adipose or fatty tissues, the tendons, and on occasion the skin—and not in others. Also perplexing is the question of why some people with very high blood cholesterol do not develop thick vessel-wall encrustations while others, with low cholesterol levels, do. There is, in sum, ample reason why one of the main activities within the SCOR Clinic is a study, which has already involved about 100 patients over a ten-year period, of what the Clinic's director, Dr. Robert H. Palmer, terms "whole-body cholesterol turnover."

To take part in the study, the individual must be free of certain ailments that in themselves generate high cholesterol levels. He must be willing to undergo special blood tests six times over a nine-month span. And he must agree to follow a stabilizing diet devised by SCOR's nutrition specialists. George Alexander qualified on all three counts. One other aspect of his health background, although hardly reassuring to him, was of considerable interest to the cholesterol researchers. He recounted a family history of heart attacks at young ages. The possibility of a genetic predisposition to cardiovascular problems is one SCOR is eager to investigate.

Over the nine months, George called at the clinic regularly and, without incident, had his



Echocardiography

The echocardiograph is an adaptation of wartime sonar. A special machine records the pattern of sound impulses transmitted to and rebounding from the heart. The profile traced by the sound can be studied for evidence of abnormality.

The Thrombosis Research Group

When the interior wall of an artery suffers damage, blood platelets (the blood cells responsible for coagulation or clotting) gather at the site. There, they secrete various substances, including a growth factor that may stimulate the formation of

arteriosclerotic plaque. The rise of this growth factor is under study by the Thrombosis Research Group. The Group is also at work on a blood test which will detect blood clots in the veins, or thromboembolisms, before they form and threaten the lungs.

Cardiac Surgery Research

Improvement of methods to sustain heartbeat is a central focus of cardiac surgery research. A heart stoppage that may be resistant to straightforward electropulse stimulation may respond to counterpulsation or to stimulus with solutions of cold potassium. All of this research is aimed at minimizing the risk to the patient of the major open-heart procedures, which may be essential but which severely tax the cardiovascular system.



Exercise Diagnosis

Columbia-Presbyterian has conducted extensive studies of the effect of mild stress exercise two weeks after heart attack. The purpose is diagnostic—to see if problems of arrhythmia, requiring special medication, develop in the patient. The technique is now widely used in the management of severe heart attack cases.

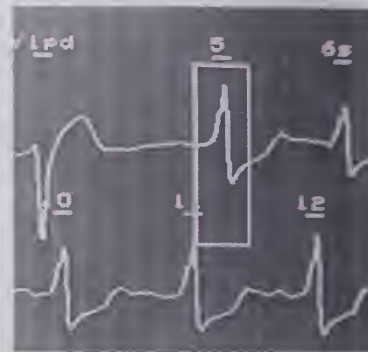
Cardiovascular Computer Center

In 1976, a grant to the Department of Medicine permitted the establishment of a Cardiovascular Computer Center to serve the basic science departments, medicine, pediatrics and surgery. The Center has since begun a program of placing on computer tape the complete records of all

cardiovascular patients in the hospital. One recent study involves the computer analysis of ECG readings of all patients during the critical year after their discharge from the hospital following surgery. It is hoped that the analysis will reveal ECG patterns which would be early warning signals of heart attack.

Arrhythmia Control

The irregular heartbeat that may signal cardiac arrest or may follow a heart attack is called arrhythmia. Columbia-Presbyterian's Arrhythmia Control Unit is investigating various types of anti-arrhythmic drugs and their effects on the nerve fibers that control the heartbeat. The Unit's findings have already led to successful medications for transient or occasional arrhythmia. Successful drug therapy for more severe cases would involve less risk than implanting a pacemaker.



George Alexander cont.

blood sampled for cholesterol turnover tests. When these measurements were completed, he stayed on as a participant in another test, a study of a new cholesterol-lowering agent. Part of the purpose of administering the second test was to find out, by repeating the turnover measurement later, if the new drug had had the beneficial effect of depleting George's total body store of cholesterol.

But in September, 1980, George mentioned to Dr. Palmer that he was feeling mild chest pains and occasional shortness of breath. These, of course, may be symptoms of cardiovascular illness. Dr. Palmer immediately referred him to a young Columbia-Presbyterian cardiologist, Dr. James A. Reiffel. Dr. Reiffel administered a stress test, monitoring the performance of George's heart while he exercised on a treadmill. The findings were disquieting. Dr. Reiffel asked Dr. Paul J. Cannon of the Diagnostic Cardiac Catheterization Laboratory for further, and more precise, tests of George's heart function. A couple of twinges, so to speak, were enough to transform George Alexander from a clinical volunteer into a full-fledged cardiac patient.

George's treatment began in the Cath Lab with diagnostic perfusion scans of the heart and the network of blood vessels leading into and out of his heart. First, George was given an injection of thallium 201. This chemical is a radionuclide, a tracer substance giving off

radiation just strong enough to be detectable but far too weak to do harm. Then, as George exercised, the laboratory observers used a scanning camera to track the thallium as it made its way into his myocardial region. Four hours later, the scan was repeated, this time with the heart not under stress. Apart from a single prick of the needle, the whole procedure was painless. The results, however, bore out Dr. Reiffel's preliminary impression of extensive coronary disease. The indication was that George was developing blockages of the main coronary arteries.

The next diagnostic stage was the use of the technique which gives the "Cath Lab" its name: the threading of a thin, hollow, flexible tube, or catheter, into a major artery (often, the femoral artery) and along the arterial pathway into the heart itself. This procedure, too, involves little discomfort—much less than the description would suggest. And it permits the use of angiograms, or motion-picture x-rays, which can locate with great exactness the site and extent of a blockage.

George's cardiac catheterization demonstrated conclusively that arterial blockages were occurring at points in the arteries particularly susceptible to cholesterol build-up and difficult to reach by mechanical means. For someone like George, with exceptionally high cholesterol counts, a partial blockage in that location would almost certainly worsen, and

Workplace Hypertension Testing

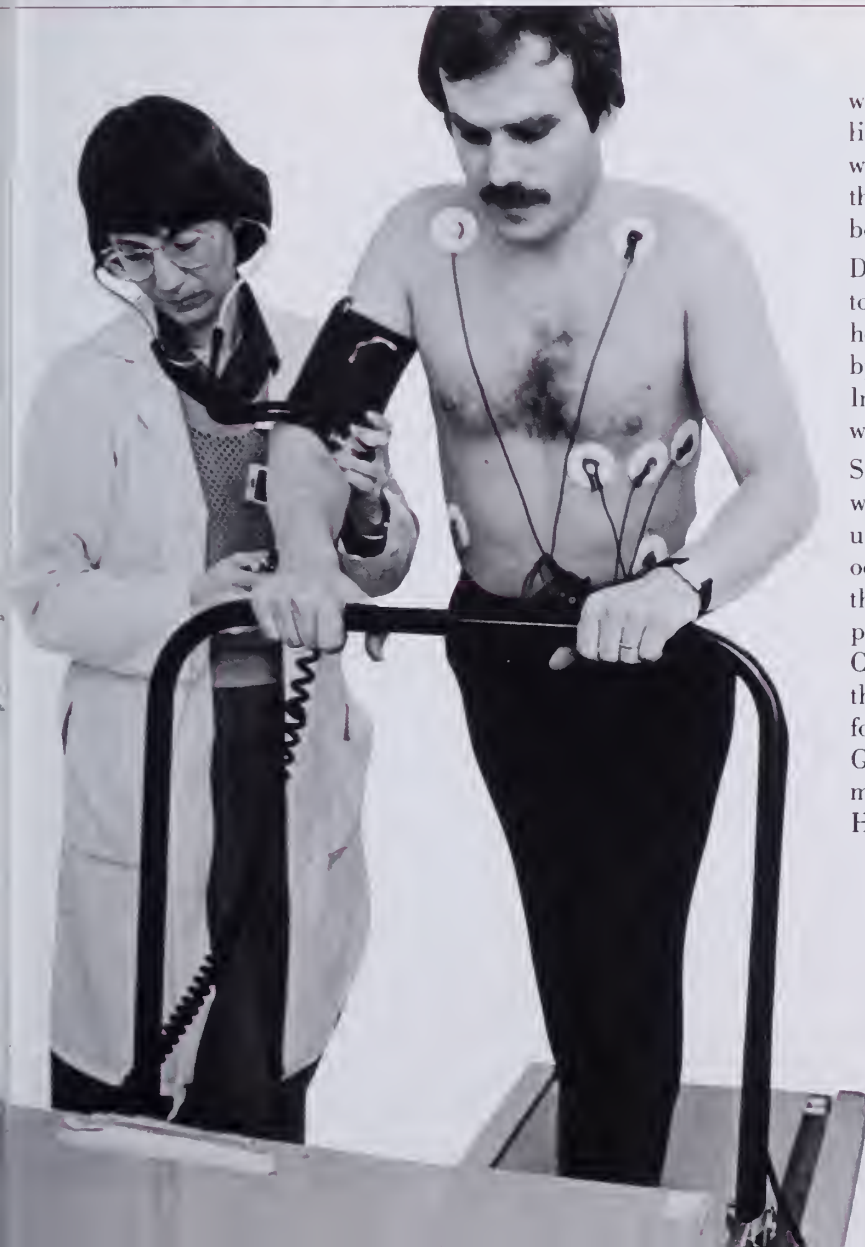
High blood pressure, or hypertension, is known to be a deadly illness in its own right. Its early detection is vital—yet, in its early stages high blood pressure registers no warning symptoms. The best way to check for evidence of high blood pressure is to administer the standard blood-pressure tests and to check medical

histories for evidence of familial cardiovascular problems. And the best places to conduct such tests are the offices and factories where people work. Dr. Leslie P. Baer of Columbia-Presbyterian directs a program encouraging employers to offer hypertension testing and treatment at the work location.

Cardiovascular Surgery

In 1979, the surgical staff of Columbia-Presbyterian Medical Center performed 700 open-heart surgical procedures. The Chest & Cardiac Surgical Service runs the only open heart program in New York State which provides complete clinical

facilities for adults, children and cardiac transplant cases. In 1981, the service will move to new operating room and recovery room facilities on the 17th floor of Presbyterian Hospital. The new facilities will make possible a 15 per cent increase in caseload, to 800 cases per year.



worsen rapidly. Inaction might shorten George's life. Working in George's favor, Dr. Reiffel felt, was his youth, his good physical condition, and the fact that his blockage had been discovered before total closure occurred.

Dr. Reiffel set up an appointment with George to advise him that, to end the dependence of his heart muscle on the clogged arteries, coronary bypass surgery was necessary. George agreed. In November, 1980, the surgery was performed, with excellent results.

Since the operation, George has been under the watchful eyes of physicians from other clinical units. His only post-operative symptoms were occasional irregularities of heartbeat similar to those suffered by about 30% of all heart-surgery patients. Research by the Arrhythmia Control Center, under Dr. J. Thomas Bigger, has led to the development of highly effective medication for the condition. The Thrombosis Research Group and Dr. Palmer's Lipid Clinic are also monitoring George's cardiovascular functions. His chest pains have disappeared.

Resources for Healing:

Stroke

Stanley Riddick: a New Jersey “Giant”

Eight weeks and a few days after undergoing complex cerebral bypass surgery—to restore mental and physical functioning impaired by a stroke six months earlier—Stanley Riddick went back to his job as supervisor in the maintenance payroll department of the Meadowlands sports complex, home of the New York Giants, among other New York and New Jersey teams. For a man who did not know when he would ever work again, it was a great event.

For a major medical center like Columbia-Presbyterian, experienced in such bypass surgery, so rapid and complete a recovery was not unexpected. Nonetheless, Stanley's recovery was still a great event for him, his family, and his surgeon.

There was reason to be pleased. In June, 1980, when Stanley visited Columbia-Presbyterian's Neurological Institute, the mild attacks he had been experiencing for a year and a half had taken a serious turn. Stanley, 65, had sensed tingling and numbness, even what he called a “clumsiness,” in his right arm and leg. These attacks—transient ischemic attacks (TIAs), the precursors of a stroke—would last up to ten minutes and occur once or twice a month. And they got worse. But not until a new symptom developed did he consult an Institute neurologist. This started as a more severe weakness on Stanley's right side. Before long, his speech was affected. Stanley knew what he wanted to

Analysis of Early Warnings:

Once a serious stroke occurs, little can be done except rehabilitative physical therapy. As a result, medical scientists have concentrated their efforts in patient treatment and research on anticipating strokes and minimizing damage if a stroke should occur. The key to these efforts at Columbia-Presbyterian has been improved understanding and management of transient ischemic attacks

(TIAs), the first warning signals of reduced blood flow, signalled by transient speech difficulty, numbness or weakness on one side of the body or by blurred vision in one or both eyes. Increased understanding of the nature, presence and significance of TIAs has led to wider recognition of pre-stroke symptoms and to earlier referral of patients who run the risk of strokes.



say, but he couldn't find the right words. He had aphasia, an interruption of the brain process preventing him from connecting his thoughts with the right words to express them. Stanley had a stroke.

Each year, more than 3 million Americans—average age, 55—suffer the kind of occlusive stroke that Stanley had. If all types of strokes are included, the number of Americans affected exceeds 4 million. Statistically, the U.S. has one of the highest incidence levels in the world. Strokes account for the third most frequent cause of death in America (after cancer and heart disease) and the nation's most frequent cause of long-term disability.

Stanley Riddick did not have to be told that his speech difficulties meant something very serious. At the Neurological Institute, he was given a set of tests, including a cerebral angiogram. Among other things, this X-ray reveals the condition of the internal carotid arteries. The internal carotids, one on each side of the head, have the critical task of supplying blood to the part of the brain responsible for perceptual and speech abilities. In Stanley's case, the angiogram revealed what appeared to be a complete occlusion of the left internal carotid.

Stanley's surgeon was Dr. James W. Correll, a 25-year veteran of neurosurgery at Columbia-Presbyterian and a prominent specialist in

Searching for Abnormalities:

A battery of highly sophisticated tests can be administered by neurologists at Columbia-Presbyterian to identify and gauge the abnormalities in arteries which might cause a stroke. The angiogram, one of the most definitive of such tests, produces very reliable X-rays through the use of dye injected via a catheter. Digital radiography, one of the most advanced (and safest) means of testing, is now used at Columbia-Presbyterian (and only several other medical centers in the country) to reveal, again with the use of injected dye, immediate computer images of arteries.

C-T Scanners:

A team of Columbia-Presbyterian scientists has made an improvement to the Center's Computerized Axial Tomographer (C-T) scanner that makes possible image detail unmatched by any other C-T scanner in the world. The scanner produces images every five seconds and allows neuroradiologists and neurosurgeons to study the size and shape of an area of brain damage with great precision. The equipment is also used to study the eye, orbit and pituitary gland with unmatched detail rendition.

Neurosurgery:

Neurosurgeons at Columbia-Presbyterian perform a wide range of specialized operations that can prevent a stroke. One of the most important of these surgical techniques—carotid artery endarterectomy—was first performed at Columbia-Presbyterian more than 20 years ago. The procedure involves removing from the arterial walls the plaque that can plug up the artery or serve as a source of fragments which might break away and travel in the bloodstream to block small arteries in

the brain. These blockages, in more than 90% of cases, are the cause of symptoms which can lead to stroke. Researchers hope to discover noninvasive techniques—perhaps chemical agents—which can prevent the abnormal deposition of material in the inner lining of arteries, known as “hardening of the arteries,” prevent the degenerative changes that occur in these deposits, and prevent the liberation of fragments which lodge in small arteries of the brain and cause most of the damage.



Microneurovascular Surgery:

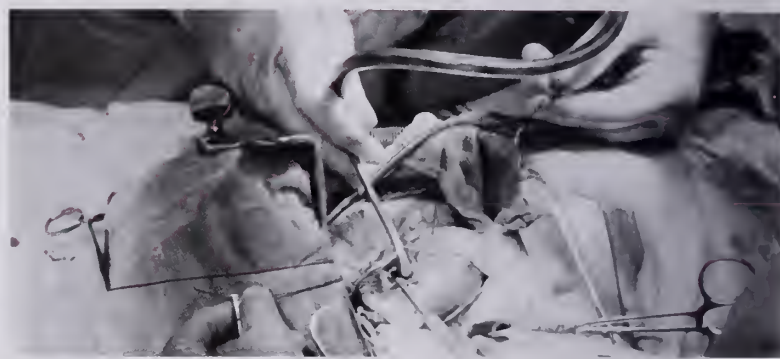
Despite its significance for most stroke-risk patients, carotid artery endarterectomy cannot be performed for patients whose cerebral arterial lesions are not easily accessible. At Columbia-Presbyterian, a highly specialized bypass technique is used in

microneurovascular surgery. The advanced, complex procedure (performed by relatively few hospitals in the country) requires connecting accessible arteries—those outside the skull to those inside the brain—thus redirecting blood flow around the occlusion.

Simultaneous Cerebral and Coronary Bypass Surgery

By the time a patient undergoes cerebral arterial or vascular surgery, an intensely collaborative process has taken place whereby the skills of a great many specialists and the most advanced techniques of medical science have been brought to bear on the diagnosis and treatment of the disease. The opinion of a cardiologist, for instance, is routinely sought prior

to surgery to make sure the patient's heart is strong enough to withstand the stress of surgery. In the majority of instances it is. If death occurs during surgery, it is often due to stress-related coronary failure in already weak hearts. For these cases, surgeons at Columbia-Presbyterian today can perform *simultaneous* cerebral bypass surgery and coronary bypass surgery.



Stanley Riddick cont.

cerebral revascularization. Despite the evidence of the angiogram, Dr. Correll felt that blood flow through the blocked carotid might possibly be re-established.

He decided to perform exploratory surgery. On June 18, the left carotid artery in Stanley's neck was exposed and opened. The occlusion was, in fact, complete. Because the blockage could not be cleared, Dr. Correll could not re-establish blood flow. He did, however, increase flow through the external carotid artery, which supplies blood indirectly to the brain. This step improved Stanley's condition.

On June 25, Stanley began a program of physical and speech therapy which would continue after he was discharged from the Hospital on July 1. By then, after only a week of therapy as an inpatient, Stanley was able to speak more accurately and use his right arm and leg more fully.

Stanley's physical therapists tailored programs to his needs and to his pace of recovery. His weakened muscles grew stronger daily. In treating his aphasia, speech therapists retrained Stanley to pick out and use the right words.

Katherine Riddick, too, was included in the Hospital's rehabilitation program. Anxious for her husband's rapid recovery and return home, Mrs. Riddick already bore the responsibilities of her job as a teacher. Now, there would be other responsibilities. Stanley could no longer drive a car. He was often unable to read or interpret the written word precisely. He wrote only with difficulty, and memory lapses prevented him from recalling names. Mrs. Riddick had to help him. At Columbia-Presbyterian, specialists in stroke medicine know that the families of stroke patients need understanding and support in their own right. Dr. Correll wanted to spend time, and did spend time, with Mrs. Riddick.

At his hometown hospital Stanley continued his rehabilitation. He visited Dr. Correll in New York every few weeks. But after several months, Dr. Correll was less than satisfied with the rate of Stanley's improvement. Stanley could not go back to work. In December, convinced that something more had to be done, Dr. Correll readmitted Stanley to Columbia-Presbyterian for bypass surgery.

Microneurovascular surgery, as its name implies, is miniaturized, delicate surgery on the blood vessels serving the brain. Even though Columbia-Presbyterian had a considerable track record in somewhat similar surgery, Dr. Correll did not recommend this

Blood Tests for Thrombosis

The work of Columbia-Presbyterian's Thrombosis Research Group may have significant bearing for those who risk or have suffered a stroke. Investigators are seeking to predict and identify the occurrence of thrombosis—a major factor in strokes—through the use of blood tests. It is hoped that a blood test can be developed which will detect thromboembolisms before they occur.

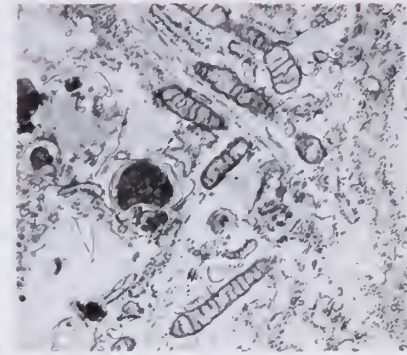
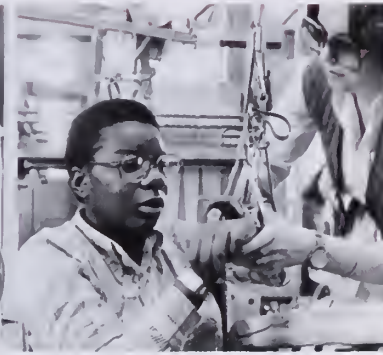
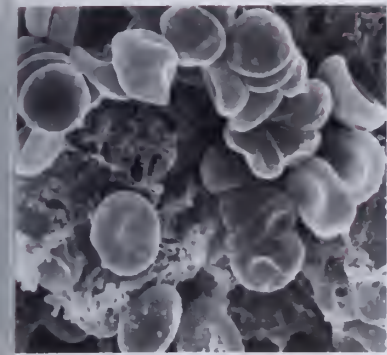
Rehabilitation

For the best chance of success, a stroke rehabilitation program should begin as soon as possible after the stroke occurs. At Columbia-Presbyterian, the program includes exercises and other therapies as well as modified cardiovascular stress testing and regular monitoring of the patient's response to the stress of the

rehabilitation program. The concept of rehabilitation has been broadened to include care for the psychological and emotional needs of the patient's family. A new film and book, both prepared by Columbia-Presbyterian specialists, explore the problems raised by stroke and help the families of stroke victims deal with these problems.

PET Scanners:

The critical ability to distinguish subtleties of cell function and metabolism in the brain (which the C-T scanner cannot accomplish) holds enormous promise for determining whether brain damage is reversible. To provide the advanced diagnostic capability of this new testing technology, Columbia-Presbyterian is seeking funds to acquire the Positron Emission Tomographer (PET) scanner. The Department of Radiology has assembled a group of physicists interested in diagnostic imaging.



bypass operation lightly. But for Stanley Riddick, the alternative was a burdensome semi-invalidism.

Stanley was readmitted on December 4. On December 5, Dr. Correll performed bypass surgery, anastomosing, or connecting, the left superficial temporal artery (an extracranial artery) to a branch of the left middle cerebral artery (an intracranial artery). A postoperative angiogram carried out on December 9 indicated to Dr. Correll that the surgery had been successful: the plugged carotid artery had been effectively bypassed by connecting other arteries and redirecting blood flow. The flow of blood was now very brisk.

Stanley's condition began to improve rapidly. He continued both physical and speech therapy, but by the end of January the need for it was over. On February 20, Stanley Riddick went back to work.

Resources for Healing:

Highlights of Work in Progress

Anatomy

Of special interest in the Anatomy Department's 1980 research was the discovery, in the intestinal tract, of a type of nerve cell that is also present, and of key importance, in brain tissue. The neuron in question uses serotonin as its transmitter, and has been implicated in brain dysfunction. The opportunity to study it in the more accessible site may lead to new understanding of nervous system abnormalities.

Anesthesiology

A team of investigators in the Department of Anesthesiology is examining the potential benefits and risks for the fetus that are associated with drug therapy used to alleviate pain and agitation of the mother. This group is also investigating the factors governing placental transfer and fetal uptake of narcotics.

Biochemistry

In 1980, the Department began to expand its biophysics staff to explore more deeply the relation within living molecules between structure and function. Advanced X-ray diffraction techniques, combined with computer analysis of possible structural patterns, are revealing the links between the shape of a bacterial or viral molecule and the way it behaves. Such research will in time bear fruit in studies of normal and pathological cellular behavior.

Cancer

One of only 21 Comprehensive Cancer Centers in the nation, Columbia-Presbyterian's Cancer Center/Institute of Cancer Research recently began operation of a computerized Patient Research Data Base to be used to improve patient care, teaching and research. The Center also has a computer-based clinical

display system that reports key clinical information on a wide variety of neoplastic diseases.

Dental and Oral Surgery

The School of Dental and Oral Surgery, in association with the Department of Pediatrics, is now offering complete dental care to physically handicapped and emotionally disturbed patients who otherwise might not receive any care. A Special Services Clinic, recently completed as part of the School's renovation, serves as the focal point for the delivery of dental care to the handicapped by the School's dental residents.

Dermatology

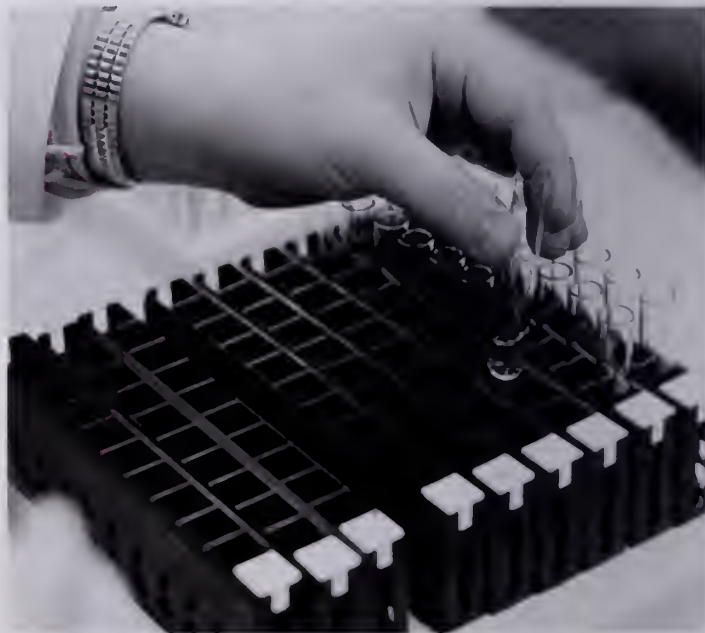
Studies of the sensitivity to ultraviolet light of cells of the skin of patients with defects in the DNA repair mechanism continue in the Department of Dermatology. Department scientists are also assessing cellular sensitivity to the mutagenic and carcinogenic effects of ultraviolet energy. This research is a vital link in the understanding of the mechanisms and causes of skin cancer.

Epidemiology

Columbia-Presbyterian's Gertrude H. Sergievsky Center focuses its work on studies of preventable causes of disorders of the central nervous system. Research there also has established that the risk of spontaneous abortion is increased by even moderate consumption of alcohol by pregnant women. One effect of maternal drinking is the risk of fetal alcohol syndrome.

Human Nutrition

The effects of maternal nutrition on pregnancy are being explored by investigators in the Center's Institute of Human Nutrition. The research demonstrates that undernourished mothers have a lower expansion in plasma volume, which is likely to re-





duce the birth weight of their babies. Other studies are examining the effects of alcohol and coffee consumption during pregnancy on placental growth and the subsequent behavior of the baby.

Medicine

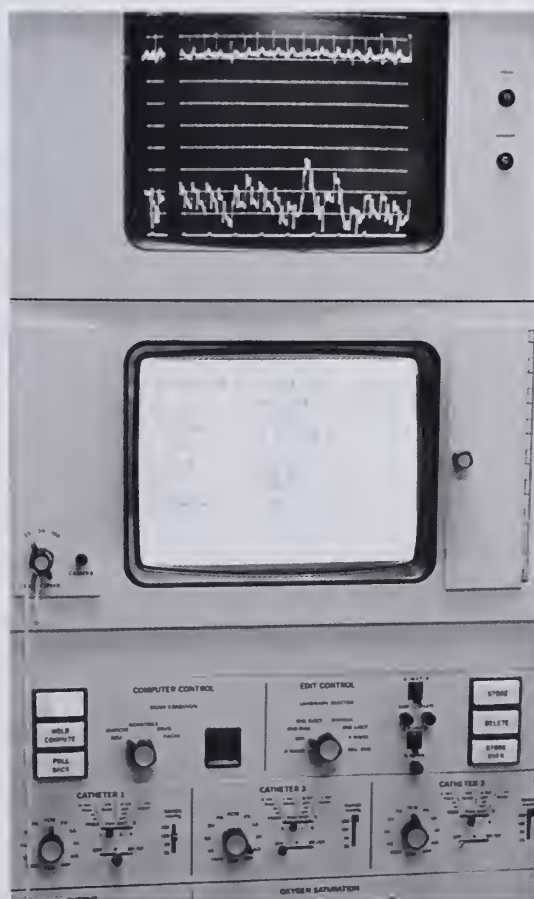
Investigators in the Rheumatology Division of the Department of Medicine are studying the function of gene products of the genetic mechanism responsible, in part, for controlling immune response. In addition, these investigators are studying T-cell differentiation antigens expressed on functionally distinct immunoregulatory subsets. Precise analysis of these genes and differentiation antigens should provide insights into the mechanisms involved in the development of rheumatic diseases such as rheumatoid arthritis and systemic lupus erythematosus.

Microbiology

The Department continues to focus its research efforts on the introduction of genes into a variety of mammalian cells. The purpose is to learn more about how viruses act upon cell tissue by exchanges of DNA, and thus about viral infection.

Nursing

As the course of medicine changes, nursing must also change if the partnership between physician and nurse is to work effectively on behalf of the patient. During 1980, the Center's Nursing Services were restructured to eliminate unneeded layers of management between the staff nurse and her senior supervisors. The result is greatly improved communication among the different nursing services, more efficient use of personnel, livelier and more stimulating consultation between individual nurses, and higher morale.



Ophthalmology

The physiological qualities of tear film on the surface of the cornea are important determinants of corneal transparency, good vision, and ocular comfort. Pioneer studies of the chemical composition of tears are now being applied by the Department of Ophthalmology to a variety of clinical problems using new, refined techniques of immunochemical analysis.

Orthopedic Surgery

The promise of specific pulsing electromagnetic fields (PEMFs) in therapy for ununited fractures is well established. The effect of PEMFs, small electrical currents that are passed through damaged bone or other body parts, continues to be of great interest to the Department of Orthopedic Surgery. PEMFs are being actively investigated by the Department for treating a wide variety of orthopedic ills more effectively.

Otolaryngology

A recently inaugurated otoneurology clinic brings together a multidisciplinary team of specialists in otolaryngology, neurology, and neurosurgery for diagnosis and treatment of a number of disorders of the head and ear including Bell's Palsy, tinnitus, vertigo, hearing loss, and tumors involving the ear and base of the skull.

Pathology

The use of a portable pump for insulin delivery has recently been introduced by the Department of Pathology and Pediatrics in management of unstable diabetes mellitus in children. Investigators in the department studying possible genetic links to diabetes have





found substantial evidence of a genetic predisposition for juvenile diabetes, inherited as a recessive trait closely related to the immune response region of the HLA group of genes.

Pharmacology

The enormous difficulty of dealing with the problems of toxic waste and environmental poisoning was brought clearly into focus by a series of nationally publicized crises such as the Love Canal incident. Because of the critical need for specialists to handle these problems, the Department of Pharmacology and the Division of Environmental Sciences of the School of Public Health are accelerating joint efforts to provide doctoral training in toxicology and environmental science.

Physiology

The mechanism by which vitamin D regulates absorption of calcium is under study in the Department of Physiology. There, investigators have discovered and purified a vitamin D-dependent membrane protein which binds to calcium with high affinity and appears to be an integral part of the intestinal transport mechanism. These and other studies exploring the molecular organization and function of biological membranes are critical to understanding a wide variety of clinical problems, including nutrition, heart disease, and cancer.

Psychiatry

Many regularly used antidepressant drugs may cause serious cardiovascular toxicity in the aged. The safety of these drugs is in question when given at the usual oral dose to elderly patients, who are already at high risk for car-

diovascular disease. Clinical investigators in the Department of Psychiatry are studying this problem in an attempt to develop reliable procedures which will enable the physician to choose the best treatment for depression while minimizing the risk of cardiac arrhythmia and sudden death.

Public Health

The School of Public Health's Division of Population and Family Health is developing a Comprehensive Adolescent Care Program to meet a wide variety of medical and social service needs of this often neglected group. In order to reach these young people, the center, through its Health Education Unit, has embarked on an intensive community education program using such tools as a mobile health van, films and flyers, and a community health fair.

Radiology

Interventional radiology—the use of radiologic procedures to actually *treat* disease—is under continuing development in the Department of Radiology, an early pioneer in the use of these nonoperative techniques. Angioplasty, the insertion of a catheter to dilate a narrowed artery, is now being used with great effectiveness to treat blockages and constrictions in arteries of the kidney and legs that would otherwise require surgery.

Urology

The Department has been conducting experiments in the use of “ultrasound”—extremely high-pitched sound-waves—on cancerous tissue. The effect of ultrasound is to overheat the tissue. In cases of adenocarcinoma in rats, the treatment markedly reduces the size of the tumor, and, in 20 percent of the total cases, it eliminates the cancerous growth.

The Presbyterian Hospital in the City of New York

Statements of Revenues and Expenses and Changes in Unrestricted Fund Balances for the Years Ended December 31, 1980 and 1979 (In Thousands)

	1980	1979
Operating Revenues:		
Patient service revenues	\$180,845	\$170,390
Allowances and uncollectible accounts	(23,135)	(26,123)
Net patient service revenues	157,710	144,267
Other services	9,298	8,535
Transfers from specific purpose funds	4,228	3,584
Total operating revenues	171,236	156,386
Operating Expenses:		
Salaries and related fringe benefits	123,349	111,533
Supplies and other expenses	49,828	44,128
Depreciation	7,483	6,887
Total operating expenses	180,660	162,548
Loss from Operations	(9,424)	(6,162)
Non-Operating Revenues:		
Investment income	5,762	5,037
Legacies and contributions	2,228	1,584
Realized net gain on sales of investments	245	164
Total non-operating revenues	8,235	6,785
Revenues Over (Under) Expenses—Before Cumulative Effect Adjustment	(1,189)	623
Cumulative Effect on Prior Years of Change in Method of Accounting for Vacation Pay		(2,078)
Revenues Over (Under) Expenses	(1,189)	(1,455)
Fund Balance, January 1	101,945	110,063
Cumulative Effect on Prior Years of Change in Method of Accounting for Investments		(4,995)
Transfers from (to) Restricted Funds for:		
Additions to property, plant and equipment	11,875	5,219
Funding of depreciation	(7,483)	(6,887)
Fund Balance, December 31	\$105,148	\$101,945

In-Patient Statistics/Year 1980

	Bed Complement	Admissions	Patient Days	Percentage of Occupancy	Average Length of Stay
Private	293	9,612	84,907	81.2	8.62
Semi-Private	667	21,789	204,072	84.2	9.41
Ward	331	10,309	94,167	78.2	9.16
Total	1,291	41,710	383,146	82.0	9.16
Nursery	48	3,305	13,321	74.3	4.26



Vanderbilt Clinic	1980	1979
Number of Visits		
Medicaid	161,584	146,497
Medicare	79,761	74,867
Blue Cross and Blue Shield	7,682	5,250
Charges and miscellaneous agencies	78,196	69,933
Full Pay	6,744	6,994
Part pay	59,382	61,545
Free, transfers and follow-ups	—	255
Personnel and dependents	20,856	21,674
Total	414,205	387,015
Doctors Offices	263,129	261,327
Grand Total	677,334	648,342

*A complete financial report can be obtained by writing the Columbia-Presbyterian Medical Center Fund, Inc., 100 Haven Avenue, Suite 29D, New York, N.Y. 10032

Columbia University in the City of New York

Health Sciences, Revenues and Expenditures (In Thousands)

	<u>1980</u>	<u>1979</u>
Revenues		
General Income	\$ 28,945	\$ 23,623
Restricted	108,426	90,807
	<u>137,371</u>	<u>114,430</u>
Expenditures		
General Income:		
Academic	9,014	7,747
Libraries	610	227
Buildings-Grounds	7,522	6,299
Registrar	387	352
Rent	1,092	804
Security	663	608
Endowments, Gifts, Receipts for Spec. Purposes	<u>19,707</u>	<u>10,578</u>
Government Grants, Contracts:		
Research/Training	39,715	34,229
Service	18,667	16,000
Total Expenditures	<u>\$127,377</u>	<u>\$106,844</u>
Available for Central Services	<u>9,994</u>	<u>7,586</u>

Program Enrollment

	<u>1980</u>	<u>1979</u>
Medicine	618	613
Ph.D. in Basic Sciences	193	174
Nursing	527	519
Public Health	472	398
Occupational Therapy and Physical Therapy	105	109
Psychiatric Clinic	31	34
Faculty of Medicine Total	<u>1,946</u>	<u>1,847</u>
Dental and Dental Post-Graduate	266	264
Dental Hygiene	56	53
Total, Faculty of Dental and Oral Surgery	<u>322</u>	<u>317</u>
Total Health Sciences	<u>2,268</u>	<u>2,164</u>



The story behind the numbers

Presbyterian Hospital

Although Presbyterian Hospital offers an exceptionally complex range of medical services, its financial operations, like those of most major hospitals, are straightforward. Every year, Presbyterian gains its operating income from its net charges to patients—paid mostly by such “third parties” as Medicare, Medicaid, Blue Cross/Blue Shield and medical insurance companies. And every year, Presbyterian must meet its operating expenses. Of these, roughly two-thirds represent the salaries and the pension and other benefits of the 6,000 men and women on the hospital staff. The remaining one-third is outlay for the supplies and equipment the hospital needs and depreciation of the physical plant.

A glance at the figures for 1980 gives meaning to the story. In 1980, Presbyterian took in \$157.7 million from routine service charges. Another \$9.3 million came in from other types of services, and an additional \$4.2 million was transferred from endowment and research funds to help defray the cost of the year’s research and teaching expenses. In all, 1980 operating revenue equalled \$171.2 million.

Total expenses came to \$180.7 million. As in every year since 1969, Presbyterian operated at a deficit. The 1980 deficit, \$9.5 million, equalled about 5.5 per cent of total revenue. The deficit, although serious, was only about half the size of the 1977 operating deficit of \$18 million.

To offset the deficit, Presbyterian Hospital was forced to transfer to its operating fund \$6 million in endowment income and \$2.2 million in current contributions and legacies—money which should have gone to stimulate and support advances in clinical medicine.

The Division of Health Sciences of Columbia University

The faculties of medicine, nursing, occupational therapy, physical therapy, public health, dental and oral surgery and dental hygiene, and the psychoanalytic clinic collectively make up the Division of Health Sciences, which is the partner of Presbyterian Hospital in the Columbia-Presbyterian Medical Center. The Division of Health Sciences, although it is closely linked to the hospital through an indivisible agreement, is in organizational terms a separate institution. As one of the graduate institutions of Columbia University, it coordinates its educational functions with Columbia.

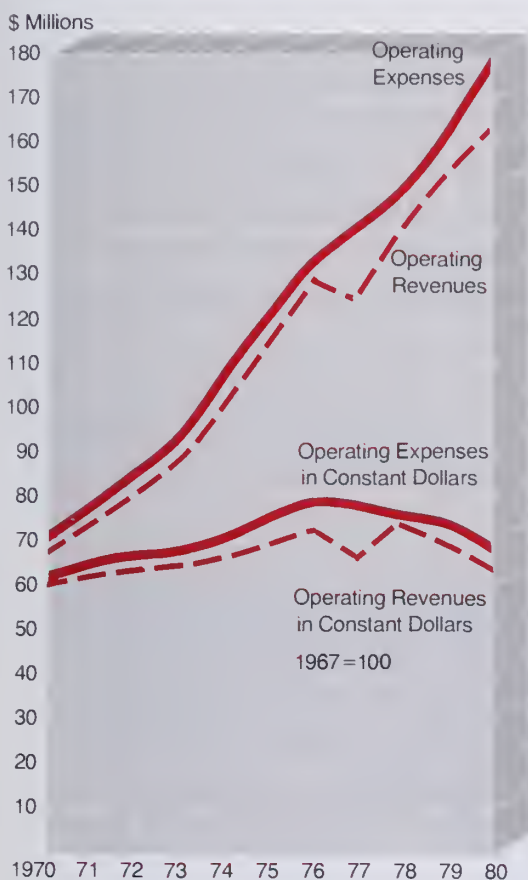
In 1980, the Division of Health Sciences took in income of \$137.3 million. About one-fifth of its income (\$28.9 million) was derived from tuitions and fees and state education allowance. The balance, \$108.4 million, came almost entirely from grants and fees restricted to biomedical research. The Division laid out \$19.2 million of its general revenues on its academic programs and premises. Virtually every dollar of receipts for research was expended. The excess of general income revenues over general expenditures, of about \$9.9 million, was turned over to Columbia for financial and administrative support.

What the Numbers Reveal

For Presbyterian Hospital, the 1980 figures reflect a widespread pattern. Virtually every major health care institution with responsibilities for the poor and near-poor faces chronic deficits. To cover the medical costs of those with neither health insurance nor the means to pay, the Hospital must draw on the income from its endowment. In so doing, it literally borrows against its future. Funds that would otherwise be committed to improving patient care and advancing clinical research must be diverted to meet current obligations.

Stringent management procedures are now helping to keep expenses—and deficits—under control, but in a hospital, where life itself is so often at stake, there is a limit to what

efficient management can accomplish. The poor cannot be denied needed medical assistance in order to balance the budget. Double-digit inflation, and the costs of increas-



Presbyterian Hospital
Operating Expenses and Revenues
in Current and Inflation-adjusted Dollars

ingly complex medical technology, have made the tasks facing the Hospital's management even more difficult. Yet, much progress has been made. As the table above indicates, Presbyterian Hospital's operating costs, adjusted for inflation, have actually declined since 1976. Unfortunately, so have inflation-adjusted revenues.

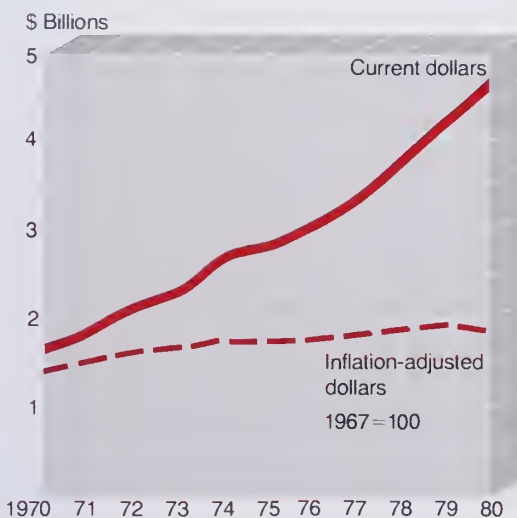
These figures reveal one key truth: *the enormous significance of private philanthropy.* Despite the inflow of tens of millions of dollars in third-party payments, the gifts and legacies of private donors remain the Hospital's chief

source of funds for the improvement of patient care and the advancement of clinical research on which the future course of medicine rests.

The figures for the Division of Health Sciences tell a similar story. For example, the federal "capitation" grants, which channeled into medical schools as much as \$2,100 per year per enrolled student, are being reduced and will shortly be eliminated. Federal funds for new hospital and medical-school construction are drying up. And federal support for biomedical research and development, which flows largely from the National Institutes of Health, has barely kept pace with inflation.

This means that in real dollars, as the graph below indicates, federal support is now decreasing. In time, this drop will hurt every academic medical center.

The issue, in sum, cannot be more clear. Increasingly, the future of great centers of health care, and the teaching and research which sustains health care, will depend on the understanding and the generosity of private donors and less on direct government support. Columbia-Presbyterian Medical Center is confident that the private sector will respond to its call for support. And proud to be considered worthy of support.



Federal Expenditures for Health
Care Research and Development in
Current and Inflation-adjusted Dollars

Resources for Healing:

Concluding Report on the MEDI/CENTER 1 Campaign

Nearly eight years ago Columbia-Presbyterian Medical Center launched the most ambitious effort in its history to secure private philanthropic support: MEDI/CENTER 1. Under the auspices of CPMC Fund, Inc., the Medical Center's development organization, this major capital campaign sought over \$100 million to modernize the Center's aging physical plant and to increase the research and teaching endowment which has traditionally been the well-spring of the Center's excellence.

Although MEDI/CENTER 1 was the product of years of careful planning and analysis, the campaign was ultimately based on trust—trust that the Center's friends would give even more generously than they had in the past and trust that new friends would come to believe in the vital mission of the Center and reach deeply to support it.

The trust has now been fulfilled. MEDI/CENTER 1 has raised nearly \$115 million from individuals, foundations, and corporations. Nearly 75 percent of that total has been designated to support the work of the Division of Health Sciences of Columbia University, the scientific and intellectual foundation of the Center's quality.

Money itself, though critically important, is, however, not the final measure of the success of the campaign. What matters most is what this new support will mean to the future of Columbia-Presbyterian, its staff, and all those it serves. By this measure, MEDI/CENTER 1 has been an extraordinary achievement. Some examples of that achievement are highlighted briefly below.

In the final analysis, MEDI/CENTER 1 is a triumph of the spirit of volunteerism that has played so great a role in making America's pri-

vate biomedical academic centers the world's finest institutions for research, education and patient care. Under the leadership of Harold H. Helm, Chairman of MEDI/CENTER 1 until 1979, Ralph F. Leach, Mr. Helm's successor as Chairman, and Co-chairman Robert D. Lilley, and through the efforts of a small army of the Center's alumni, friends, and staff, a victory for private philanthropy at Columbia-Presbyterian has been won.

Generous private support has sustained and strengthened Columbia-Presbyterian, as it must again in the years to come. A great academic medical center must constantly renew itself as the science and art of medicine evolve. While MEDI/CENTER 1 has been a resounding success, it is hoped that through CPMC Fund, Inc., ongoing needs will again be met as the Center continues to provide the finest medical care in the world.



Some Major Accomplishments of the MEDI/CENTER 1 Campaign

Building and Renovation

School of Dental and Oral Surgery

Total renovation and re-equipping of dental clinics, teaching facilities, and office areas.

School of Public Health

Complete renovation of its facilities including classrooms, study areas, student lounge and office areas.

College of Physicians and Surgeons

Major upgrading and renovation of five floors of the P&S Building including the Departments of Medicine and Neurobiology, the Muscular Dystrophy Muscle Center, and a new Faculty Center.

Julius & Armand Hammer Health Sciences Center and Augustus Long Library

A new 20-story tower housing one of the nation's leading medical libraries, a large auditorium with full audio-visual facilities, a video production studio, modern teaching facilities, and extensive research laboratories.

Presbyterian Hospital

Funds have been raised toward:

- Eye Institute renovation and re-equipment
- Vanderbilt Clinic renovation and expansion
- Babies Hospital renovation and expansion
- general endowment and other construction projects

Endowment

Creation of 13 Fully Endowed Professorships

- Sidney Carter
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- Johnson & Johnson
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- Robert F. Loeb
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- Gertrude H. Sergievsky Chair in Epilepsy and Cerebral Palsy
- Frank E. Stinchfield Chair in Orthopedic Surgery
- John K. Lattimer
Chair in Urology
- James Winston Benfield Chair in Operative Dentistry
- Byron Stookey Chair in Neurological Surgery

Initiation of 17 New Endowment Funds including:

- 12 partially funded professorships
- two lectureships
- one prize fund

Six of the partially funded professorships are at least half-way to their goals. New and growing projects such as these highlight the continuing need for the support and generosity of private philanthropy.

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